

A Technique to Determine the Self-Noise of Seismic Sensors for Performance Screening

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Seismic noise affects the performance of a seismic sensor and is thereby a limiting factor for the detection threshold of monitoring networks. Among the various sources of noise, the intrinsic self-noise of a seismic sensor is most difficult to determine, because it is mostly masked by natural and anthropogenic ground noise and is also affected by the noise characteristic of the digitizer. Here we present a new technique to determine the self-noise of a seismic system (digitiser + sensors). It is based on a method introduced by Sleeman et al. (2005) to test the noise performance of digitizers. We infer the self-noise of a triplet of identical sensors by comparing coherent waveforms over a wide spectral band across the set-up. We will show first results from a proof-of-concept study done in a vault near Albuquerque, New Mexico. We will show, how various methods of shielding the sensors affect the results of this technique. This method can also be used as a means of quality control during sensors production, because malperforming sensors can easily be identified.